

of 980 cm^{-1} . Namely, heat treatment is carried out at the same time as the electron beam irradiation, and changing the pressure, whereby bonding between the CH_3 group and the primary chain in a molecule is cut, and a dangling bond is formed. In addition, dehydration reaction effectively occurs due to heat treatment, whereby the dangling bond is coupled with another molecule or group without being coupled with the OH group. This is considered as a reason why the insulation film formed by the process of the present embodiment has low relative dielectric constant and sufficient crack resistance property by the formation of the rigid network.--

IN THE CLAIMS:

Please amend claims 1, 6, and 8 as follows:

1. (Amended) A method of manufacturing a semiconductor device comprising:
preparing a substrate to be treated; and

forming an insulation film above the substrate, which includes applying an insulation film raw material above the substrate, the insulation film raw material including a substance or a precursor of the substance, the insulation film comprising the substance, curing the insulation film raw material by irradiating an electron beam on the substrate while heating the substrate in a reactor chamber, and changing at least one of the parameters selected from the group consisting of pressure in the reactor chamber, temperature of the substrate, type of gas having the substrate exposed thereto, flow rate of a gas introduced into the reactor chamber, position of the substrate, and quantity of electrons incident to the substrate per unit time when the electron beam is being irradiated on the substrate,

wherein the substrate temperature is changed by a predetermined amount during the electron beam irradiating process.

6. (Amended) A method of manufacturing a semiconductor device according to claim 1, wherein the position of the substrate is changed in a range from not less than 50 mm to not more than 120 mm in distance from an electron beam generating section that generates the electron beam.

8. (Amended) A method of manufacturing a semiconductor device according to claim 1, further comprising:

at least one of pre-heat treatment which carried out before curing the insulation film raw material and post-heat treatment which carried out after curing the insulation film raw material in the reactor chamber, changing at least one of the parameters selected from the group consisting of pressure in the reactor chamber, temperature of the substrate, type of gas having the substrate exposed thereto, flow rate of gas introduced into the reactor chamber, and position of the substrate when the at least one of the pre-heat treatment and the post-heat treatment is being carried out.

REMARKS

In this Amendment, Applicants amend claims 1, 6, and 8 in order to more appropriately define the present invention, and amend the specification to correct typographical errors. In accordance with the requirements of 37 C.F.R. § 1.121(c)(1), Applicants provide a marked-up version of the amendments made to the claims and the specification in attached Appendices

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com